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# **Perspectives for conservation and monitoring of biological diversity in Ukraine under Large Herbivore Initiative WWF – Europe programmes**

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The Large Herbivore Initiative for Europe (LHI) is a new initiative by WWF International with initial funding provided by WWF-Netherlands. In February 1998 the Initiative was founded during a Programme Planning Workshop in Bialowieza, Poland. Since a considerable number of large herbivore species lives in natural or semi-natural habitats of Central Asia, Siberia, and Mongolia, the area of interest of LHI has been extended to those regions.

The species of interest for LHI are essentially large animals, foraging on plants, with various physiology, morphology, and feeding habits. Their impact on environment is more complex than simple destruction of vegetation through eating or trampling, but their presence seems to be a crucial factor allowing for the sustainable survival of the whole array of plant and animal species.

That is connected with two most important objective of the Large Herbivore Initiative – “to prevent the disappearance and decline of large herbivore species, not just for the species themselves, but as well for the crucial role they play in ecosystems” and - where possible restore the role of herbivores as one of the means to make ecological restoration possible”.

In Eastern Europe this means the priority for the protection of threatened species and their habitats. In the Western part of the continent, the challenge will be the ecological restoration.

In the large part of Eurasia, considerable economic and land use changes threaten endangered populations or species. That process however creates new chances for ecological restoration of former wilderness areas. Being an important link in a trophic pyramid, large herbivores are crucial for numerous ecosystems, and are also important for nature conservation. They contribute to shaping plant communities, and landscapes, increase the biodiversity, and are indispensable for many other species.

In the past, numerous large herbivores were able to restrict growth of woody species, thus maintaining natural openings and grasslands and contributing to general biodiversity. In forest ecosystems, their presence resulted in a mosaic pattern of forest stands of uneven age, intermixed with grassy openings and shrub communities. In that way, new niches for other species which otherwise could not dwell in forest habitats with a closed canopy were created.



In open grassland ecosystems, through grazing, maintained was matter cycling and energy flow, crucial for their stability. Growing human pressure including hunting and habitat transformation has led to the extirpation of large herbivores or their restriction to remote areas not attractive for development (Kampf 1998).

In Central and Eastern Europe, the only remaining in the wild large herbivore species, are red and roe deer. Depending on their foraging behaviour they are classified as browsers – intermediate feeders, or concentrate selectors, but not typical grazers. Since the extinction of the aurochs, the bison and native wild horses, there are no more grazers left in the wild.

Ukraine is large European country with the area of 603700 sq. km and population – 53 million of people, encompassing three geographical zones: steppe, forest-steppe, and mixed broad-leaf forests covering respectively 40, 34, and 26% of the country territory.

In its southern part, in the Carpathians and in the Crimean mountains grow coniferous, mixed, and broad – leaf forests. Zone of mixed forest in the northern part of the Ukraine gradually turn into scattered woodlands of forest – steppe zone, consecutively changing into the steppe area near Black and Azov Seas.

The number of fauna species in Ukraine amounts to 45 thousand out of which: 350 birds, 200 fish, 113 mammals, 20 reptiles, 17 amphibians.

The number of species listed in the Red Book is still increasing, due to the gradual extinction of local fauna. The National Red Book lists at present 381 animal species.

Ecosystems of Ukraine were under strong anthropogenic pressure, including ecologically unsustainable economic activities, obsolete technologies and equipment. That resulted in considerable deterioration of environment quality in this country.

At the moment there is no research projects specifically oriented on Large Herbivores of Ukraine. General studies including other game species were conducted in Institute of Zoology in Kiev, in Institute of Ecology of the Carpathians National Academy of Sciences of Ukraine and few other institutions.

Due to difficult economical conditions of Ukraine it is not so easy just to estimate the actual state of Large Herbivores within the country. Even more difficult is to implement conservation and reintroduction programs for those species, since even many species listed in red Book like the Bison, remain under the strong pressure of poaching.

Dominating in Ukraine is roe deer (62 %). Second position takes the wild boar (23 %). Red deer consist 9 % and moose only 6 % of the Ukraine Large Herbivores.

The numbers of roe deer increased from almost 119 000 in 1980, to more than 160000 in 1990. In 1991, the total number of roe deer was over 170 000 individuals, but decreased to about 136 000 in 1997.

Numbers of wild boar was very low in the 1946-1952 period due to epizootic diseases. As a result of conservation policy during 12 years (from 1961 to 1973) its numbers increased by 7 times. In 1973 were recorded 60 500 individuals of wild boar in Ukraine and their density in 1976 was estimated for 4 individuals per 1000 ha. The species is widely spread within the whole territory of the country. The average population size between 1979-1989 varied within the range of 48-58 thousand. After 1991 their numbers decreased to about 38 600 in 1997.

In the whole Ukraine between 1980 to 1989, the population number of red deer changed from over 17 500 to over 22 600. In the 1991 year their numbers were the highest – almost 25 000 individuals. It decreased again after 1991.



The population of moose was on decline until XIXth century. In the XXth century it increased again. The highest numbers: 17 870 were reported in 1973. In 1991, were recorded almost 14 800 individuals but that has declined again to 6 282 in 1997.

The last bison in the wild in the country were killed within the period of 1919-1926. First attempts of bison reintroduction in 1937 were never completed because of the Second World War. In 1965 and in following years bison from the Bialowieza Forest have been brought to the northern part of Ukraine, and later to several sites in the Ukrainian Carpathians (European Bison Pedigree Book 1989, pers. comm.). In 1999 bison lived in 11 sites of the 9 regions of Ukraine. Highest populations were in Czernivtsi (167), Volyn (102) and Vinnytsa (70 individuals).

In Ukraine, without constraints lives about half of world population of Bialowieza - Caucasus line. The bison is included in the Red Data Book of Ukraine and falls under Bern Convention. Total number of bison metapopulation in Ukraine exceeded 500 individuals the last year but now consists of 489 individuals. They live so far in few isolated and scattered subpopulations consisting of 100-150 animals, which does not secure the viability of the whole national population. There is necessity to refresh blood in already existing herds and to create new sites for breeding bison in the wild.

A preliminary study on the population status of the European bison *Bison bonasus* in Polish, Slovakian, and Ukrainian Carpathians was supposed to provide a basic knowledge on this mountain population of the bison, necessary to initiate its reintroduction program. Locations of 3 free-ranging herds in Poland (all in Bieszczady Mountains) and 4 in Ukraine (Rozlucz, Skole, Nadvirna, and Bukovina) have been defined. Their present population numbers vary between 16 animals at Skole up to over 200 at Bukovina herd. In Slovakia only 9 bison live in captivity. Recent population trends of the bison in Polish Bieszczady Mountains are stable, but in Ukraine have been remaining on decline for several years. Potentials were estimated for re-establishing the European bison over its former Carpathian range, and basic components of the reintroduction programme, like analysis of population structure, reproduction and mortality factors, habitat assessment and feasibility study.

That survey has proved that only few herds have a chance for a gene exchange through natural migrations (mostly those in Polish Bieszczady Mountains). Ukrainian herds (except two neighbouring small groups in Skole and Rozlucz) remain in isolation. Scattered, isolated herds are threatened by inbreeding, and present possibilities to extend their range in a natural way are strongly limited.

The program of re-establishing free-ranging bison population in the Carpathians should consider analyses of population structure and genetics, define reproduction and mortality factors, habitat assessment, and include a feasibility study, considering human dimensions aspect.

Reintroduction plans for the European bison should be based on the detailed knowledge of present population status and habitat conditions. High degree of inbreeding within the world population of the species requires a careful selection of individuals for reintroduction. Intensive forestry and neighbourhood of agricultural areas make necessary a feasibility study for every potential reintroduction site.

An ultimate goal is a wild bison population along the Carpathian range, able to maintain genetic diversity, and stable population trends in long-term perspective.



As the largest and the most spectacular herbivore species, the bison in the Carpathians may become a symbol of ecological restoration and a flagship species for nature conservation of the region. The project of its re-establishment has a chance to become the first European attempt on such temporal (prospectively over 10 years) and spatial scale (over 1000 km). That should become a model of a regional ecological network, and provide basis for co-operation on eco-regional scale, in an integrated, sustainable management of natural resources of the Carpathians.

Another urgent, and potentially large-scale programme is the prospective reintroduction of Przewalski horse. This species has been brought from Mongolia in 1899 to Askania Nova Reserve, as a first introduction in the Europe and in the world. It is breed in Ukraine since 1904 so effectively that its numbers are on increase.

Prospectively, the Askania Nova population of Przewalski horse can be used for releasing horses into steppe reserves of southern Ukraine. The influence of this introduction to succession trends in steppe ecosystems has to be evaluated. The use of Przewalski horse in restoration and management of an ecosystem of Ukrainian steppe is a potential programme under Large Herbivore Initiative WWF Europe (Akimov, Kozak, Perzanowski, 1999).

The condition of steppe ecosystems in Ukraine is critical due to prolonged mismanagement and the lack of sound conservation programme. In the past, numerous grazers, including domestic horses (about 5.5 million) maintained the equilibrium of vast steppe ecosystems of Ukraine. Moderate grazing by horses has been described as the closest to natural way to stabilise steppe ecosystems.

At present, the only available effective grazer, present in sufficient numbers to impact successional processes in Ukrainian steppes is the Przewalski horse *Equus ferus Przewalski*, formerly the largest herbivore of steppe zone in Eurasia. Reported as extinct in the wild, it has been successfully bred, and its captive population exceeds now 100 animals. Wild populations of this species should help avoiding behavioural and genetic changes irreversible if the species would spend more time in captivity. First attempts (e.g. Mongolia, China) done have already proved that Przewalski horse can effectively adapt to the wild life. Reserve Askania Nova, the largest breeding ground of Przewalski horse, may become a source of excess animals for their introduction in other areas of Ukrainian steppe.

Some remaining fragments of Ukrainian steppes are used as a pasture for large herds of workhorses. However, so far there is no sound plan for protection and management of those remnants of the most important natural ecosystem of Ukrainian lowlands. Still dominating in Eastern Europe, a passive approach to nature conservation and management of protected areas is focused on maintaining the present status, without consideration to habitat evolution and adaptation.

Management programme for those reserves should include the presence of an effective grazer, which could fill up a niche of a first level consumer, able to restrict the growth of plant non-native species for a steppe habitat, and stimulate the energy flow through the ecosystem. In general, wild horses would not require supplementary feeding nor artificial shelters, allowing for maintenance costs to be kept at minimum. Such an attractive species should become a major attraction, considerably increasing tourist interest in this area, thus contributing to the local economy.

Introduction of Przewalski horse could become an ecological tool allowing the natural management, regeneration and future sustainable use of the steppe zone in Ukraine. Additionally as an efficient primary consumer, not requiring constant human support, the species can be used to control overabundant vegetation within Chernobyl zone.



This concept of the Przewalski horse as a tool in restoration and management of ecosystems fits very well to three main goals of Large Herbivore Initiative WWF: the conservation of landscapes and ecosystems as habitats for large herbivores, the conservation of all large herbivores in viable and widespread populations and the increase of knowledge and appreciation of large herbivores by people.

However officially, the level of exploitation of Large Herbivores in Ukraine is not so high; poachers and the wolf kill many animals. Within the country there are still conditions for the increment of Large Herbivores numbers. This requires the knowledge of ecological conditions in different regions, optimisation of population structure in many game species not to mention major changes in public awareness and support for nature conservancy.

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